

## ***Rotorcorp Whitepaper Series***

# 8 Things You Should Know Before Overhauling Your Robinson Helicopter



### **Introduction**

Thank you for taking the time to download and read this paper. We hope that Robinson Helicopter owners, operators and maintainers around the world will utilize this guide as a practical tool allowing for a more fully informed and economically sound decision regarding the 2200 hour service for Robinson R22, R44 or R66 Helicopters. This article is not intended to be a sales or marketing piece for Rotorcorp. However, as a leading Authorized Robinson Helicopter Service Center, the information presented here necessarily draws on decades of experience involved in the overhaul and maintenance of Robinson helicopters. As a further qualification, Rotorcorp sells about 10-15% of all overhaul kits made by Robinson Helicopter Company each year, and is recognized as trusted global parts distributor serving over one thousand companies in forty five countries.

If you or someone you know has an overhaul on the horizon, consider passing this paper along for their review. We are certain that there will be some useful information that can put to immediate use. While we would love to earn your business, we are also happy to serve as your resource for anything relating to keeping your R22, R44 or R66 helicopter operating safely. If you ever have a question or concern, we would enjoy providing a timely and thoughtful response to your inquiry either in person, over the phone or via e-mail.

Sean Casey,

Vice President, Rotorcorp LLC

## **1. Unbundle And Save**

Most factory authorized service centers and factory trained technicians offer a single turn-key overhaul solution that includes the overhaul kit, engine build up kit, airframe labor and an engine option. Frequent add-ons include interior overhaul items and bladder fuel tank installation. While convenient, this solution is can be anything but straight-forward from a cost perspective, holding the potential for hidden layers of mark-ups that can drastically increase finished product cost. Unbundling and individually pricing each facet of the overhaul separately (air frame, engine and labor), gives buyers the highest level of confidence that they are getting the best price.

Ask your maintenance provider if you can provide your own overhaul kit and engine. Many technicians will be happy to be free from the task of parts ordering, arranging and tracking shipments, and coordinating with suppliers. While the Robinson overhaul kits are considered “complete kits” there are often several thousand dollars of miscellaneous additional parts required- ask your maintainer to provide you with a list of the “usual suspects” and order these items with your overhaul kit to avoid delays and to minimize future surprises.

## **2. Lock In Early Bird Pricing**

Let’s face it - the 2200 hour overhaul shouldn’t come as a surprise to anyone! Hopefully you have diligently contributed to your aircraft maintenance reserve and will cross the finish line with sufficient funds to complete the overhaul and get a fresh 2200 hours of flight time. Start pricing your overhaul kit, engine option and labor at least six-months from the anticipated overhaul date. A supplier who deals in volume may offer an additional discount in exchange for your early commitment, and many will maintain a sales calendar extending out a year or more. Ask if there is a committed order coming up in the next 2-4 months and if you can benefit from ordering at that time as well - your flexibility can pay off big time.

Be prepared or offer to pay a small deposit to lock-in early bird pricing with the remaining due at the time the order is placed. What a supplier is looking for is a “good faith commitment” that you will complete the order when the agreed upon order date arrives.

## **3. Understand Lead Times**

At the time your order is finalized your supplier should be able to provide you with accurate lead times for each item being ordered, but it is recommended to include some buffer time to accommodate any unforeseen delays. Ask your parts supplier if there are any components that are causing delayed fulfillment and what they can do to mitigate those delays. Lead times can change daily sometimes, don’t be afraid to ask your provider to get updated lead times in writing.

Here is an example. In 2015-2016 Robinson experienced extreme delays of up to 6 months in filling overhaul kit orders that included bladder fuel tanks, which were severely back-ordered from the vendor. The problem has since been remedied by Robinson, but at the time Rotorcorp learned that customers could benefit by ordering and shipping the overhaul kit and the bladder tanks separately, as the bladder tanks are amongst the last items installed during overhaul. So when the kit arrived in 1-2 months, the airframe work could begin well ahead of the arrival of the tanks, and was often completed by the time the bladder tanks delivered - avoiding extended delays in completion of the overhaul.

A savvy supplier that orders several kits a year can use their experience and knowledge of current lead times and delays to help you navigate around problems, getting you back in the air as soon as possible.

#### **4. Determine the Right Engine Option For You**

Airframe overhaul usually coincides with engine overhaul. If that is the case with your aircraft, you typically have three options. A) Have your current engine overhauled locally B) Purchase an overhauled shop engine, or C) Purchase a Lycoming factory overhauled, rebuilt zero-time, or new exchange engine. Lycoming does not generally stock completed engines, but rather builds them to order, so the timeline for each of these options is generally the same (4-6 weeks). The primary variable is cost and quality.

Option A, locally overhauled engines, usually is the least expensive option, but quality of work and warranty support can vary widely. Stock shop engines, or option B, tend to be very high quality, but often do not carry warranties that are comparable to the manufacture and cost slightly less than a factory option. Lycoming factory overhauled, rebuilt and new engine (option C) are the highest quality and carry significant warranties but tend to cost about 30% more than a field overhauled engine.

Before you make your final decision on how to approach your overhaul, be sure to check if your O-320, O-360, O-540 or IO-540 engine is subject to several crankshaft Airworthiness Directives. These generally effect engines that were manufactured between 2003 and 2006. If your engine is subject to this AD, the supply of replacement crankshafts in the field is very limited and often times the expense makes it not financially feasible to comply with the AD when combined with the cost of the remaining overhaul. Therefore, an AD subject crankshaft nearly always means your better option is to go with a Lycoming factory engine, or option C.

No matter which of the above routes you choose, the engine will have to be re-installed in the aircraft. It is highly recommended to purchase the appropriate Robinson engine build up kit for proper installation of your overhauled engine into the helicopter when you purchase the 2200 hour kit. These kits include new baffles, nuts, bolts, gaskets and some necessary lines and hoses.

For R66 operators with RR300 engines, there is currently no exchange option available. Your engine must be inspected and overhauled only at a certified RR300 overhaul facility and sent back to you once complete.

#### **5. Shipping and Insurance**

Overhaul kits and engines are expensive, heavy and can be awkward to transport and handle. This means that the opportunity for damage during transit can be higher than expected. On rare occasions entire shipments are lost, mis-shipped or severely delayed. But your shipper says that it's insured, right? Not always.

Many suppliers rely on their shipping company's *Carrier Liability* policy to cover lost or damaged goods. These policies, deductibles and coverage limits vary greatly from carrier to carrier. They are often based on the dimensional weight of the items being shipped and may have limits that do not reflect the actual value of the contents which may leave unaware buyers on the hook for the difference.

As a rule, aircraft parts are light weight and high cost. A loss claimed under some carrier policies for a set of fifty thousand dollar R44 main rotor blades with a dimensional weight of 147 lbs. (207"x17"x21"/ 500lbs) may only be valued at less than \$150 through that carriers policy. In addition, making a claim against a carrier on a policy that carrier owns can create conflicts that do not fully protect the buyer.

Be familiar with all of your vendor's insurance procedures, coverages and limits. Look for suppliers who carry their own cargo insurance policies that provide replacement value coverage with a low deductible. These policies are likely to pay claims quickly and remove the potential conflict of filing a claim with the carrier. If your supplier does not have a cargo policy in place, there are several insurers that provide single-shipment coverage at extremely affordable rates. Consider purchasing one of these single-use policies when placing large orders.

## **6. The Truth About Core Deposits and Refunds**

In the aviation world many major components are too complex, expensive or difficult to manufacture to warrant purchasing new each time a replacement part is needed. Manufacturers keep the wheels turning by establishing a pool of remanufactured or overhauled parts sold on an exchange basis. Many of the major components included in the Robinson R22, R44 and R66 overhaul kits are overhauled components, which drastically reduces cost and increases availability of these items.

By combining the component cost and core deposit, buyers pay in advance for the full value of the overhauled item, and later receive a refund for a portion of the deposit based on the condition of the returned core. Once the core is returned to the seller and it has been inspected to ensure it is rebuild-able and resell-able, the core deposit is refunded to the buyer less any deductions for deficiencies.

With Robinson it is important to know that the core return, evaluation and refund process can take up to 3 months from the time the core items are received at the factory.

The core return process must be handled by the supplier from whom you purchased your overhaul kit. This supplier should be willing and able to handle the core return forms and shipping of core items. The core forms will include specific information including part number and serial number (when available) of each part being return for core consideration. Once the cores and the forms have been received by Robinson, they will analyze their condition and provide a work sheet to annotate any deficiencies and deductions. These work sheets will be used to generate a credit memo for the total amount of the refund for all components being processed on one order. Once the credit memo is issued, the refund is made back to your supplier, and you should expect that refund payment along with all the supporting documents from Robinson from your supplier.

Because of the vastly different operating conditions each helicopter is exposed to, there is no rule of thumb or crystal ball that can be used to gauge or estimate the expected amount of a core refund. Generally, core components that are out of current revision will receive a lower value. Items with damage, corrosion or other defects are also likely be heavily penalized. It is worth the time and effort to thoroughly clean all surfaces of core items to be submitted - drain all fluids and use plugs on hydraulic items. This way the Robinson team member opening the items will not have a greasy, dirty

component to clean before the evaluation. It is also recommended to attach core return forms directly to each corresponding component using a zip tie and plastic bag. Another pro-tip is to include a small bag of candy or treats in the core crate for the team at Robinson to enjoy when they open your crate.

## **7. Get Everything in Writing**

While pricing out your air frame, engine and labor charges it is a good idea to get a written estimate from each supplier or provider. Not only will this serve as a more formal pricing method, but it will give you an idea of how responsive and customer-focused the company is. Remember that a company will likely never be more responsive than when they are trying to earn your business. Companies that are unresponsive can be easily removed from consideration without costing you a dime! Most importantly, written estimates will also give you the ability to perform an apples-to-apples comparison for similar items and services. Be sure to look at hidden costs like inflated shipping and insurance charges, phony documentation or handling charges.

## **8. Watch out for Annual Price Changes**

The timing of when to place your overhaul kit order can potentially have a dramatic effect on pricing. In January of each year, Robinson generally increases the pricing on all parts and components anywhere from 2-3 percent. When the average R44 overhaul kit is around \$135,000, this can correlate to a \$2700-4000 variation from one day to another. Robinson also generally stops accepting new orders about one week before the price change, and is closed for two weeks around the holidays each year, so timing is paramount if you plan to take advantage of current year pricing near year end or just into the New Year.

Lycoming also implements price increases, but not usually across the board or at a given time of year. It is important to ask if there any expected increases on the horizon well ahead of ordering.

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When you arrive at the crossroads of a 12 years or 2200 hours on your Robinson helicopter, you are presented with several options to stay in the air – sell your timed out aircraft and repurchase a new or newly overhauled aircraft, overhaul your timed out aircraft and keep flying, or overhaul and sell your current Robinson and buy another aircraft. Our hope in sharing the information in this whitepaper is that we have removed some of the mystery involved in the overhaul process. Whatever you decide to do as you approach zero time, it should be an informed decision at the very least!

Thank you for your time, and do feel like you can reach out to us to ask any questions that may arise.